



**Thermo Scientific  
Analytical Solutions**

## **Solutions for food safety, quality, and halal testing**

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## Thermo Scientific Analytical Solutions

We offer a broad range of analytical solutions applicable to food safety and quality testing for food and feed. Our portfolio addresses food safety and quality concerns as well as nutritional analysis and traceability. We've developed applications in the areas of:

- Adulteration and Authenticity
- Allergen Detection
- Environmental Pollutants
- Natural Toxins and Biotoxins
- Food Contact Materials and Packaging Contaminants
- Pesticide Residues
- Processing Contaminants
- Quality Control
- Nutritional Chemistry
- Trace Elemental Analysis
- Veterinary Drug Residues

We also offer a variety of sample preparation options such as solid phase extraction (SPE), QuEChERS, Thermo Scientific™ Dionex™ ASE™ 350 Accelerated Solvent Extractors, and Thermo Scientific™ Transcend™ System, an automated online sample extraction system that couples to an LC-MS system.

### Laboratory Support

In addition to analytical instruments, we offer laboratory equipment, reagents, columns and consumables, software and services to support our customers. We also offer equipment and products for complete PCR/qPCR assays.

Our Laboratory Information Management Systems (LIMS) can securely provide an audit trail for regulators that documents instrument validation status, traceability, sample identification and tracking, as well as any documented and ensured corrective actions or established and controlled methodologies.



## Microbiology Solutions

Built on proven PCR technology and backed by world-class service and support, the Thermo Scientific™ SureTect™ Real-Time PCR System is designed to quickly and accurately detect microorganisms in a broad range of foods and associated samples. This unique solution combines speed and performance in an easy-to-use, cost-effective platform—giving you results you can be sure about.

### Why choose SureTect?

#### Single enrichment step

No secondary enrichment or regrowth required, for faster, simpler testing.

#### Pre-filled lysis tubes

For maximum convenience and reliable, consistent cell lysis.

#### Tableted PCR Reagents

Eliminates PCR reagent pipetting, to enhance reproducibility and minimize hands-on time.

#### Streamlined protocol

Facilitates processing of multiple assays in the same run, for maximum efficiency.

#### Simple, intuitive software

For straightforward training, quick set-up, and simple tracking of results.

#### Automatic data interpretation

Reliably reports test results as positive or negative.



## Halal Testing

“Halal” means permitted or lawful and is used to designate foods that are allowed for consumption. In addition to prohibiting certain foods and ingredients (known as Haram), Halal also requires that foods be absent of chemical or physical contaminants, adulterants, or other harmful substances. In many cases, food safety testing being undertaken in laboratories is the same type of testing that is done for Halal.

### Specific Halal Tests

In addition to standard food safety and quality testing, Halal certification requires a confirmation that products are free from alcohol. Alcohol can develop in foods as fermentation by-products or it

can be added to products as synthetic ethanol. Alcohol determination is typically carried out utilizing headspace GC analysis with FID detection but, for tracing the origin of ethanol, isotope ratio mass spectrometry (IRMS) is used.

Halal certification also requires foods to be free from porcine products. This type of testing is typically accomplished through PCR/qPCR analysis. We offer a complete range of products for porcine testing workflows, including microplate instrumentation, protein extraction systems, real-time PCR/qPCR detection, and assay kits. FT-IR instrumentation can also be used for detection of porcine related products such as lard.

PCR	Polymerase Chain Reaction
IC	Ion Chromatography
MS	Mass Spectrometry
GC	Gas Chromatography
LC	Liquid Chromatography
HRAM	High Resolution Accurate Mass
IRMS	Isotope Ratio Mass Spectrometry
HPLC (UHPLC)	(Ultra) High Pressure Liquid Chromatography
AAS	Atomic Absorption Spectroscopy
ICP-OES	Inductively Coupled Plasma Optical Emission Spectroscopy
ICP-MS	Inductively Coupled Plasma Mass Spectrometry
OEA	Organic Elemental Analysis
FTIR	Fourier Transform Infrared Spectroscopy
NIR	Near Infrared Spectroscopy
UV-Vis	Ultraviolet Visible Spectroscopy

# Food Safety and Halal Testing Technology Selection Guide

Testing Category	Analyte Class	Culture Media	Immunological	PCR	IC	IC-MS	GC	GC-MS, GC-MS/MS	LG, UHPLC	LC-MS, LC-MS/MS	HRAM LC/MS	IRMS	AAS	ICP-OES	ICP-MS	OEA	FT-IR, NIR	UV-VIS
<b>Specific Halal Testing</b>	Alcohol (origin, fermentation by-product or addition of ethanol)						•	•				•						
	Porcine Testing			•			•	•		•								•
<b>Chemical Contaminant Testing</b>	Dioxins							•										
	Melamine / Cyanuric Acid							•	•	•	•							
	Pesticides				•	•	•	•	•	•	•							
	Packaging Migrants						•	•	•	•	•							
	Veterinary Drug Residues							•		•	•							
	Antibiotics							•		•	•							
	Fungicides								•	•	•							
	Marine Biotoxins								•	•	•							
	Bisphenol-A							•		•	•							
	Acrylamide							•		•								
	PAHs							•	•	•	•							
	VOCs							•	•									
	MCPD								•		•							
	MOSH/MOAH							•										
	Sudan Dyes									•	•	•						
Mycotoxins									•	•	•							
<b>Trace Elemental Analysis</b>	Arsenic												•	•	•			
	Lead												•	•	•			
	Mercury												•	•	•			
	Cadmium												•	•	•			
	Potassium												•	•	•			
	Sodium												•	•	•			
	Iron												•	•	•			
	Zinc												•	•	•			
	Manganese												•	•	•			
<b>Pathogen Detection</b>	Salmonella	•	•	•														
	E. Coli	•	•	•														
	Listeria	•	•	•														
	Campylobacter	•	•	•														
	Viruses			•														
<b>Food Quality</b>	Allergens		•	•						•	•							
	Nutritional Analysis				•		•	•	•	•	•		•	•	•	•		•
	Product Authenticity / Food Origin						•	•		•	•	•			•		•	

## Food Safety Market Support

In addition to our product portfolio, we are committed to supporting the food safety market through a variety of additional resources such as our Persistent Organic Pollutants (POPs) Center of Excellence as well as our Pesticide Analysis Center of Excellence. We also have a food safety focused resource, the Food Safety Response Center, which was established to help serve the needs of the food safety community. During crisis incidents involving chemical contamination of foods, the FSRC staff works around the clock to quickly develop new methods of analysis. In non-crisis times, the team works on a variety of food safety projects including validation of methods to create reliable and easy-to-implement applications and solutions.

## Food Safety Response Center (FSRC)

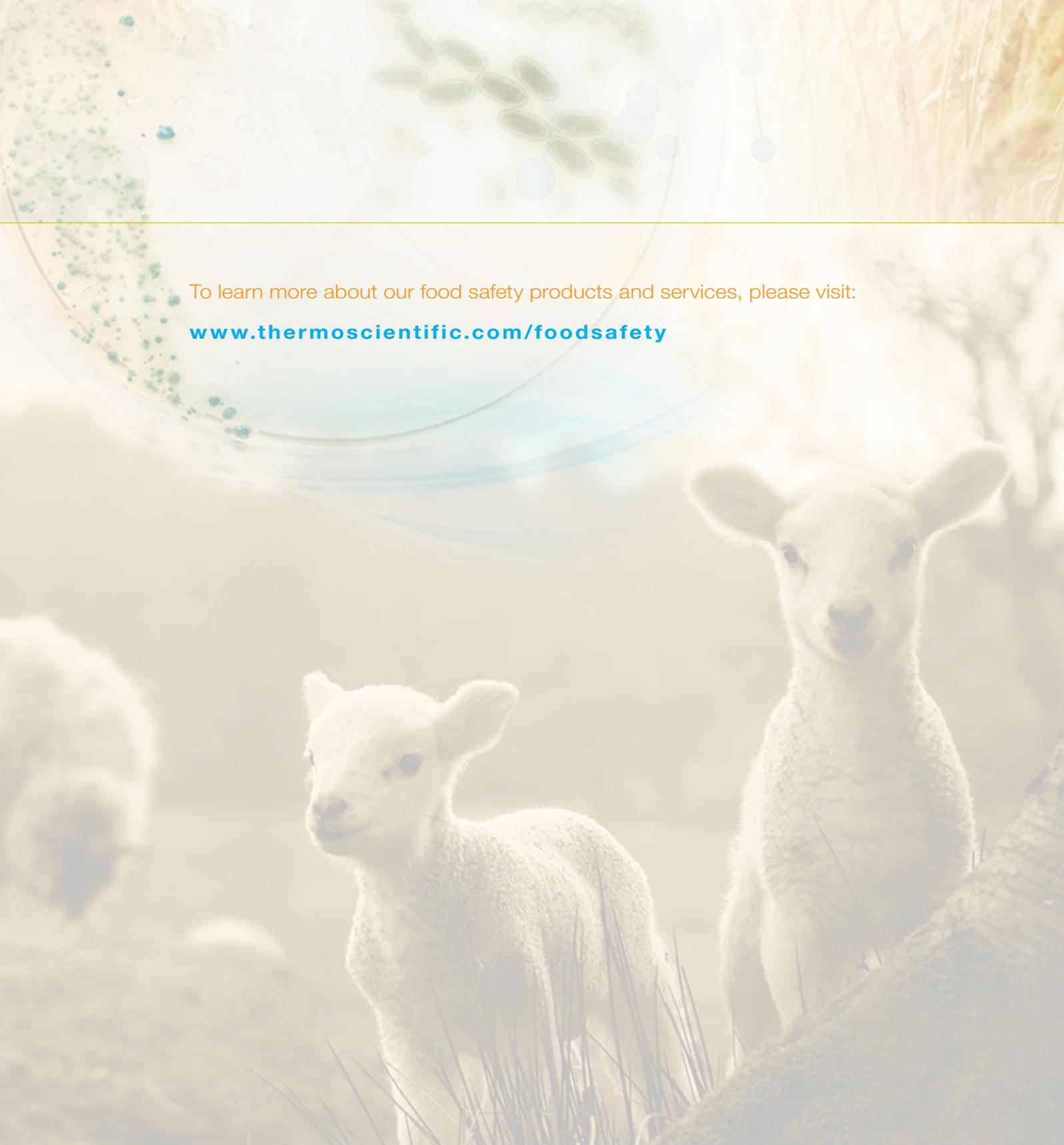
### Responding to the needs of the Food Safety Community

A fully-equipped sample prep and instrumentation lab staffed with experts in analytical method development for complex food matrices. Serves as a food safety resource, not a contract test lab. FSRC is equipped with Thermo Scientific and Fisher Scientific™ products.

### FSRC Activities

- Partner with leading researchers on food safety projects
- Assist customers on application of new technologies in their labs
- Provide training for emerging markets
- Rapid development of new methods during a crisis and improvement of existing methods





To learn more about our food safety products and services, please visit:

[www.thermoscientific.com/foodsafety](http://www.thermoscientific.com/foodsafety)

[www.thermofisher.com/foodsafety](http://www.thermofisher.com/foodsafety)

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